

Recommendations

□ Acute Criteria:

- Adopt EPA recommended criteria formulas for *total ammonia*.
- These criteria are similar to NJ at $\text{pH} > 7.0$, but much less protective than PA.
- Criteria are related to pH, but not to temperature.
- Salmonids present criteria would apply only to Zone 1A where maintenance and propagation of trout are a designated use.
- Salmonids absent criteria would apply in Zones 1B through 1E, 2 through 6.

Recommendations

❑ Chronic Criteria:

- Adopt EPA recommended criteria formulas for *total ammonia*.
- These criteria are similar to the other states at pH > 8.5. Less restrictive than NJ at pH > 6.5, and less restrictive than PA at pH > 6.0.
- Criteria are related to both pH and temperature.
- Criteria are not related to the presence of Salmonids, but are related to the presence of early life stages.

Recommendations

❑ Marine Criteria for Ammonia

- Only three of the five signatory parties have water quality criteria for un-ionized ammonia. PA and DE do not have criteria.
- EPA and NY have the same criteria. NJ's criteria are somewhat lower.
- Total ammonia criteria vary depending on the pH, temperature and salinity. U.S. EPA (1989) provides conversion tables. Total ammonia criteria are lower at higher salinities.
- Adopt EPA criteria for un-ionized ammonia for acute and chronic toxicity.

Recommended Criteria

– based upon U.S. EPA National Criteria

Agency	Class	Criteria (mg/L)	Value at pH=7.5 & T=20°C
Acute Criteria	Salmonids Present	$CMC = 0.275 / 1 + 10^{(7.204 - pH)}$ + $39.0 / 1 + 10^{(pH - 7.204)}$	13.3
	Salmonids Not Present	$CMC = 0.411 / 1 + 10^{(7.204 - pH)}$ + $58.4 / 1 + 10^{(pH - 7.204)}$	19.9
Chronic Criteria	Fish Early Life Stages Present	$CCC = 0.0577 / 1 + 10^{(7.688 - pH)}$ + $2.487 / 1 + 10^{(pH - 7.688)}$ * $\text{Min}(2.85, 1.45 * 10^{0.028(25 - T)})$	4.3
	Fish Early Life Stages Absent	$CCC = 0.0577 / 1 + 10^{(7.688 - pH)}$ + $2.487 / 1 + 10^{(pH - 7.688)}$ * $1.45 * 10^{0.028(25 - \text{MAX}(T, 7))}$	8.0

Recommendations

■ Application of Standards:

- Duration – Follow EPA recommendations and use 1 hour for acute criteria and 30 days for chronic criteria. This recommendation is more stringent than NJ, less stringent than PA that applies criterion as a maximum, and the same as DE and NY?.
- pH and temperature values –
 - Specify a median pH value of 7.1 (Section 4.20.5A3.) and background temperature specified in Section 4.30.6C.1. for Zones 2, 3, 4 and upper Zone 5.
 - Utilize site-specific data typically from automatic monitors or monitoring surveys (for Zones 1 and 6).

Recommendations

■ Application of Standards:

- Design Flows:

- Acute Criteria – 2500 cfs at Trenton and 7Q10 for other tributaries.
- Chronic Criteria – 30Q3 flow at both Trenton and for other tributaries.

■ Marine Criteria - Total ammonia criteria vary depending on the pH, temperature and salinity. U.S. EPA (1989) provides conversion tables. Total ammonia criteria are lower at higher salinities.